

ABSTRACT

A piercing device includes an outer tube rotatably supported on a first shaft and eccentrically arranged relative to a second shaft, so as to be driven for rotation. Piercing needles are arranged on the second shaft, spaced from each other in a circumferential direction, projecting radially outwards, rotatable about a second axis, and extendable and retractable relative to an outer surface via holes in the outer tube. A needle restraining member, rotatably supported on the second shaft, transmits torque to the piercing needles when driven for rotation. The first plurality of needles rotate in unison, as do the second plurality of needles and are fixedly connected to support members; thus, protecting the needles from unreasonable force and preventing undesirable enlargement of pinholes and deformation of the rubber sheet. Further, when the needles are advanced into the rubber sheet and retraced therefrom, enlargement of the rubber sheet pinholes can be prevented.